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ABSTRACT

This paper, focusing on schooling for children in Africa, recommends a pedagogy that begins with the practical, everyday experiences of the child and proceeds by extension toward more abstract ideas. It is pointed out that the basic areas of survival--food, clothing, and shelter--could be treated in courses in agriculture, home economics, and business. It would then be possible to generate ways in which teachers could apply these practical areas to building higher-level cognitive skills. Selecting the use of equipment and tools as a sample skill area, an outline is offered of the content considered under this concept. Objectives are developed from this outline, and a description is given of the expected behavior for the average child working in this subject. Basic skills encompass reading, mathematics, science and technology, social studies, and the arts. This brief course description offers a guide to selecting and teaching practical skills that are important in a given cultural setting, and to developing curricular materials that will develop higher-level and abstract thinking skills (JD)

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Education for Third World Children: Linking Practical Skills to Academic Content

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EDUCATION FOR THIRD WORLD CHILDREN: LINKING PRACTICAL SKILLS TO ACADEMIC CONTENT

Martha Tyler John

Children are the bridge to tomorrow. They can work together with the older generation and can provide the resilience needed to help us bounce back from problems. The eternal optimism of youth can do much to resolve difficult issues and can even inspire the older, more jaded adult to get involved in trying again. But children must learn many things as they grow if they are to effectively resolve issues and assist in designing a better tomorrow. How shall they learn without a teacher? And how shall the teachers teach without a knowledge of the children they are trying to guide?

THE NEED FOR EDUCATION

In the Third World areas, the need for the education of children should be evident because the problems facing the Less Developed Countries are so confounding and so numerous. The optimism of youth will surely be much needed to resolve problems dealing with hunger, poverty, rapid urbanization and limited resources. In LDC's there is a higher percentage of the population under fourteen years of age than in the more developed areas. This is the group where education today can affect the problems of tomorrow, in a positive way. Let us look at one area where many Less Developed Countries are located - the African continent. The fact is that Africa now has the youngest population in the world. A percentage comparison follows:

Percentage Comparison of Population, children 0-14

Africa---------- 45%
Developing Countries in
General---------- 39%
Europe---------- 23%
U.S.A.---------- 25%

*Populi, 1982, p. 4

Given this data and the reality of the need for education for this large population of young people, where should one begin to search for relevant information about the children. How shall teachers learn about the children and the practical aspects of their pupil's lives so that they may provide quality education for the "Children of the Third World" ?

Organizations like the International Council on Education for Teaching, the International Association for Cross-Cultural Psychology, World Bank, and, of course, the Association for Policy, Research and Development in the Third World have much material that can serve to provide background information about children. This can be joined to a knowledge of research findings to produce an exemplary teacher.

Curricular materials and research findings have also been generated by UNESCO, by IDRC (International Research and Development Council), and U.S.AID (Agency for International Development). These materials would be useful to teachers anywhere, and would help them to know more about how children learn. There are also beginning bits of information available that can assist the teacher in learning about the particular population of pupils that s/he will teach in the Third World. Research data dealing with logical thinking tasks, food and nutrition, career opportunities and even the use of technology have been gathered and there are numerous articles in journals produced by educational groups that allow

teachers to glean ideas from the research.

At present, however, the application of the research findings to the practical classroom situation remains largely in the hands of the teacher. Many teachers in Third World countries do not feel adequately prepared to interpret research and apply it to specific populations. Indeed, this is a formidable task. Whatever level of sophistication teachers bring to the task, they will be working with children, the crucial variable for future success. Surely some general guidelines could help even those teachers who feel inadequate.

One general "rule-of-thumb" idea for teaching children can be used by anyone without access to specific research findings. It is this; begin with practical, everyday experiences of the child and proceed by extension toward more abstract ideas.

PRACTICAL SKILLS CONSIDERED

Practical skills are a necessity for survival in any culture. They consist of skills that help the individual live a healthful, productive life. The need for children to develop practical, marketable skills by the time they finish school would seem to be a primary goal for Third World countries. For many Third World countries this has not been the case. Schools and governments have often followed a system set up by others, and even where the system once seemed appropriate, it may no longer fulfill the needs of all the students. For example, examinations are given at the end of the seventh and tenth years in school and pupils who fail these examinations do not continue their formal education. Hence the term "leaving exam" is often applied to these tests. The examination has stressed academic skills and the pupil who has not exhibited adequate ability to earn the academic content that is required for this grade level will leave school at this time. What practical, employable skills does the pupil possess as s/he leaves the school? Unfortunately, no measure of this area has been taken.

An examination pattern such as the one just described is part of the Euro/British system and is used in many parts of the world. It has produced many fine academic scholars, but often the exams do not fit the needs of a particular population very well. Some program of examinations is surely needed, but the pupils should be able to obtain at least a beginning level of employment higher that the non-school attender in a career of his/her choice upon leaving school. Even if the pupil does poorly on the exam, schooling should have provided some beginning skills up to that level. Alfred North Whitehead (1961), a great American educator, said, "In simpler language, education should turn out the pupil with something he knows well and something he can do well" (p. 105).

Survival Skills Reinterpreted

The practical areas that are needed for survival for most people are related to one's ability to provide food, clothing and shelter; maintain a strong, healthy body; and in some way express one's self in creative ways. The latter point could be argued, but anthropologists have found artifacts in even very primitive areas indicating that all individual's need to produce and share an idea or experience creatively. For example, the Bushmen in Africa have provided us with many drawings on the walls of caves and on ostrich eggs that show a high level of creativity. The following are three examples of paintings taken from caves or egg particles:

The areas of survival that have been described could be translated to more familiar content as understood by the twentieth century teacher. Food, clothing and shelter could be relabelled, Agriculture, Home Economics and Business. Family Health could be interpreted as the more common term given to the concept of maintaining a strong, healthy body; and Arts and Crafts is the label sometimes used to indicate the creative output of a people. Once this interpretative step has been taken, once can begin to generate ways in which teachers could apply these practical areas to build higher level cognitive processes. Of course, some background knowledge about child development will be needed before any applications can be made that have meaning for teaching youngsters.

COGNITIVE DEVELOPMENT

Much research has already been done on the cognitive development of children in many different parts of the Third World. For example, in Africa a large number of studies have been completed and they are reported and summarized in articles and books like the following sample, Harkness & Super (1981), Deregowski, Muldrow and Muldrow (1972), Jahoda & McGurk (1974), Heron & Simonsson (1969), Dasen (1977), John et al (1983) and

John & Nsibandze (1987). Werner (1979) summarizes the logical thinking Piaget replication studies, "To sum up, cross-cultural research on Piaget's operational thinking has paid most attention to factors of education, acculturation, and urbanization, less to social factors that foster interpersonal relationships...." (p. 222). These are the areas, particularly the area of education, that can readily be related to practical skills areas in the school setting. Frequently, in the Piaget replication studies, the LDC pupils could perform the tasks given. Often this was accomplished when the pupils were somewhat older than their Euro/Western counterparts. The value of the tasks to the pupil and the amount of previous practice may have entered into the success on task factor. Is it possible to take a practical, useful skill area and develop academic applications that allow for practice that will enhance cognitive development?

It is possible to select a practical skills area, like agriculture, and develop a comprehensive outline of the content considered under this broad concept. This outline could be expanded upon, behavioral objectives developed and finally an application to cognitive development could be designed, (John, 1988).

An outline of the major and second level subheadings that one might deal with to develop the practical skills needed in the area of agriculture is provided here. The list is not exhaustive, but will be used as a sample, only.

A SAMPLE SKILL AREA

AGRICULTURE

I. CAREER OPTIONS
- A. List of Choices
- B. Earning Potential
- C. Geographic Location
- D. Educational Requirements

II. HOME GARDENING
- A. Deciding to Plant
- B. Preparing the Plot
- C. Planting the Crop
- D. Maintaining and Protecting
- E. Harvesting
- F. Preserving

III. IRRIGATION
- A. Needs Assessment
- B. Open Channels Irrigation
- C. Pipe/Sprinkler Irrigation

IV. FRUIT AND NUT TREES
- A. Planning the Business
- B. Planting the Orchard
- C. Care of the Orchard
- D. Pest Management
- E. Harvest

V. SMALL ANIMAL PRODUCTION
- A. Breeds and Breeding
- B. Care of Animals
- C. Healthy Animals
- D. Uses/Profitability

VI. EQUIPMENT AND TOOLS
- A. Woodworking Hand Tools
- B. Planning a Woodworking Project
- C. Machinery
- D. Working with Concrete

VII. AGRIBUSINESS
- A. Advertising/Display
- B. Selling
- C. Human Relations
- D. Communication Skills

An Expanded Subcategory

Let us now extract one category and subcategory and further delineate the topics that might be considered.

VI. EQUIPMENT AND TOOLS
A. Woodworking and Hand Tools
1. Woods
2. Grades of Lumber
3. Plywood
4. Fasteners and Clamps
5. Use of Tools
6. Care of Tools
7. Glues and Resins

The subcategory becomes much more manageable and behavioral objectives can be developed so that the child can learn about woodworking and hand tools in a participatory way.

Objectives for the Subcategory

Objectives can be developed from this outline and the teacher will know what the expected behavior is for the average child working on the subcategory of woodworking and hand tools. The following is a list of possible objectives for this content:

VI. EQUIPMENT AND TOOLS

A. Woodworking and Hand Tools

Objective: Given instruction and practice opportunities in using woodworking hand tools, the pupil will:

1. Describe how timber is grown, harvested and milled.
2. Identify three types of hardwood and three types of softwood.
3. Select four grades of lumber and tell what each grade is best used for.
4. Identify the best type of plywood for interior use.
5. Choose an exterior plywood and write a paragraph describing the reason for selecting the one s/he did.
6. Demonstrate skill in pounding nails and fastening screws into wood.

7. Select from several choices the proper screws for a particular wood binding.

8. Demonstrate the proper use of the following tools in the way described below:

   a. Lay a rule on the edge of a piece of wood and mark the length of six inches (or centimeters).

   b. Place a try square on a board and check with a pencil to determine of the board is square.

   c. Use a steel square to measure a large piece of plywood and record the measurements.

   d. Place a level on its side and make a list of six items that are exactly level and another list of six items that are not level.

   e. Mark a straight line on a vertical board using a chalk line. (hold the chalk tightly on both ends and snap the middle.)

   f. Use a hammer to place a nail and then using the claw pull the nail out of the wood.

   g. Draw pictures of a crosscut saw showing eight and ten points per three centimeters. Develop another drawing showing the fine teeth of a bucksaw.

   h. Use a jackplane to smooth a rough piece of wood.

   i. Drill several one-quarter inch holes using a hand drill.

   j. Bore a large holes in a piece of wood using a brace and bit. (Drill through one side of the wood until the tip of the bit shows: then turn the piece of wood over and complete the hole by boring the other side).

   k. Demonstrate the proper way to hold a screwdriver when screwing three different sizes of screws (hold vertically and use different sizes of screwdrivers).

   l. Trim a piece of wood to a shape that has been drawn on paper; use a chisel and mallet when you need more pressure.

9. Correctly sharpen the cutting edges of two different tools.

10. Experiment with at least three types of glue on wood; for example, animal, resin, and cosein glue. State the conditions under which each holds best.

Basic Skills Needed for the Subcategory

In order to carry out the assignments required in the Equipment and Tools subcategory, the pupil will use a number of academic skills. These skills can be accented and extended to promote the cognitive growth. If the pupil does not already possess these skills, the teacher will need to provide instruction and assistance for the pupil so that s/he can acquire these skills.

LANGUAGE ARTS	Read - Instructions, charts Chart - Safety procedures Compare and Contrast - Articles comparing woods Write - Paragraphs
MATHEMATICS	Measure - Distances, angles, area, pipes Calculate - Costs, board feet Identify - Tools, geometric shapes
SCIENCE/ TECHNOLOGY	Collect - Plywood samples Recognize - Types of saws Identify - Woods, saws, drills Classify - Woods
SOCIAL STUDIES	Discuss - Grades of lumber, timber growth process Recognize - Different types of tools Identify - Customer needs
ARTS	Draw - Crosscut sawteeth, match a shape Trim - Wood, use chisel Sketch - Lines, designs needed Cut - Washers, sharpen tools

ACADEMIC CONTENT

Once a child has been exposed to this type of rigorous instruction in the practical area of equipment and tools for agricultural use, for example, it should be only a small step to logical thinking processes. The logical thinking tasks developed by Piaget would seem like a reasonable extension of the thinking already begun in the subcategory covered here. The ability to conserve length is an application of the ideas developed in objective 8a, for

example. It would be possible for the teacher to have pupils compare two pieces of wood six inches long, by placing the pieces side by side. The wood could then be moved so that one was not in exact alignment with the other. The pupil would then be asked if the pieces of wood were still the same length. Similarly measurement is stressed in 8g where centimeter measurement is required. The teacher could easily extend this learning to a more abstract level as the pupil learns about metric measurement in general. A comparison of metric and nonmetric could follow, and higher level thinking processes would be used based on a very practical example.

Conservation of number can be seen in objective 8d, for instance, and the idea could be built upon to enhance the pupil's concept of number. In other ways number could be accented in simple, practical exercises. Prices, shipment costs and hours of labor required as part of the cost factor could be elaborated upon by the pupil. This would assist the pupil in acquiring the much prized higher level thinking skills needed in more urban, high-tech settings.

POLICY IMPLICATIONS

If academic content based on practical skills is to be acquired by pupils in the upper primary grades, then the skill areas must be carefully developed. Skill requirements would need to be fine tuned and spelled out in behavioral terms so that the translation to more abstract thinking operations could be more easily seen by the teacher. There is one and only one way of acquiring the habit and power of using anything. " ...if in education, we desire to produce a certain conformation of mind, we must day by day, and year by year, accustom the students' minds to grow into the desired structural shape" (Whitehead, 1961, p.94). One would, perhaps call Whitehead's idea of conformation of the mind by different

terms today; but there can be no doubt that certain mental processes are developed by repeated exposure to stimuli that evoke the processes. If we would teach practical skills, we should select the skills that are important in a given cultural setting and then, develop curricular materials that will teach these skills in a clear, direct manner. Likewise, when we wish to teach academic content that is unfamiliar to pupils, it is wise to base the content on a practical, well-known skill and then develop this into a higher level, logical, perhaps more abstract process.

PROBLEM SOLVING, LOGICAL THINKING

The introduction of higher level cognitive processes can be based on practical skills areas in agriculture, home management, health care, the development of small business skills and arts and crafts. If this is to be done, Ministries of Education would need to examine the practical skill areas already in place and extend the problem solving potential of each one. Students could be required to learn much more vocabulary, to contrast and compare one procedure with another, to generalize about the efficiency of a particular treatment or to logically organize the steps required to produce a specific product. If teachers were to emphasize problem solving and logical thinking based on systematized practical skills, pupils would have a much better chance to succeed in the academic world. Teachers can not do this alone. Training programs, workshops, an real examples would be needed is this were to come to fruition.

STEPS TOWARD THE GOAL

In order to link practical skills to academic content in a recognizable manner, the following steps would be necessary:

1) Introduce practical skills areas from a clear, behavioral perspective.
2) Have the steps needed to acquire the skill developed in "bite sized" pieces.
3) Provide much practice - "day by day, and year by year".
4) Extend each practical skill by using specific vocabulary.
5) Require a comparison to be done verbally for each skill or technique learned.
6) Provide a place in the curriculum for pupils to generalize about the skill they have learned.
7) Begin a flow-chart process in connection with any procedure that is used.
8) If possible, transfer the simple flow chart technique to the computer so that it can be shared widely.

The procedures suggested here provide just an elementary sample of the ways in which practical skills can be linked to the academic program. In the Third World, and in the world in general, for that matter, the academic world has become remote from the real world of work. In all countries a clearer linkage with practical areas would be advantageous. In Less Developed Countries such linkage is crucial to development; even critical to survival.

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